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ABSTRACT

The finding that young children do not prepare markers to help themselves relocate objects after a delay may have resulted from children's misunderstanding of the difficulty of unassisted retrieval. This study examined children's ability to recognize that they should prepare markers in two simplified object relocation tasks after they had been given a clear demonstration of the difficulty of the retrieval task. Older and younger preschool children relocated a felt pen and their toothbrush in sets of identical pens and toothbrushes. Children were first allowed to fail both tasks to emphasize the difficulty of unassisted retrieval, and were subsequently prompted to use available markers. Results showed that even when the task is simplified and children are aware of the retrieval problem, preschoolers do not always prepare available markers, although they are able to use markers to relocate objects after delays of 2 to 21 days. Preschoolers required several prompts to prepare markers to help themselves solve the relocation problem. Many children selected reminders that were not sufficiently specific. Children's alternative strategies for relocating the objects implied that they may sometimes fail to use markers because they overestimate their memory prowess. Older children who do prepare markers without prompting may still need to learn to select reminders that will be informative at a later time. (Author/RH)

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Preschoolers' preparation for retrieval in object relocation tasks

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Several studies have suggested that preschoolers generally do not think to prepare markers to help themselves relocate hidden objects (Ritter, 1978; Ritter, Kaprove, Fitch, & Flavell, 1973; Ryan, Hegion, & Flavell, 1970). For example, Ritter (1978) found that preschoolers required several explicit prompts before they would mark a cup containing a piece of candy, in order to find it after the cups were moved. However, in such studies it is possible that children were sufficiently unfamiliar with the retrieval problem presented in the task that they did not realize the difficulty of unassisted retrieval. In addition, target objects have sometimes been hidden inside of containers that were then moved to new locations, which may also have been confusing to young children. The goal of this study was to test children's ability to recognize that they should prepare markers in two simplified object relocation tasks, after they had been given a clear demonstration of the difficulty of the task.

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Method

Subjects. Two groups of preschoolers participated in the study. There were 15 younger preschoolers (mean age 3:7 years) and 18 older preschoolers (mean age 5:6 years).

Materials. Ten blue-ink felt pens and one red-ink felt pen were used in the pens task. All the pens had identical black exteriors and black caps so that the cap had to be removed from each pen to determine the ink color. Six yellow children's toothbrushes were used in the toothbrush task, along with small cartoon stickers. Plain white drawing paper and a large tote bag were also used in the tasks. The sessions were

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recorded with a cassette tape recorder.

Procedure. Each child was interviewed in two sessions about two days apart. In the first session each child participated in two retrieval tasks, which were presented in counterbalanced orders. The experimenter presented the tasks in the context of providing some basic instruction about dental care.

Pens task. The child was asked to draw a picture of someone brushing their teeth, using plain drawing paper and the box of felt pens. The experimenter praised the completed drawing and then asked the child to add a small detail using the red pen. The child had to search through the pens, opening each one, to find the red felt pen. Children had to search an average of 7.7 pens to find the red pen, with a range of 2-17. The child was asked if it had been difficult to locate the red pen, and what could be done to make it easier to find it in the future; that is, when the experimenter returned for the second session. A different-colored pen cap that could be used as an effective marker had been placed on the table. The experimenter presented three increasingly specific prompts to encourage the child to use the new cap as a marker. If necessary, the experimenter then placed the new cap on the red pen and explained how it would help the child find the red pen more easily during the next session. The experimenter recorded the number of prompts required for the child to use the new cap as a marker along with any alternative suggestions offered by the child for relocating the pen.

Toothbrush task. The child was presented with a new toothbrush which was then sealed in a clear plastic bag and placed on the table with five identical toothbrushes belonging to other children. Four of the toothbrushes had been previously marked with different small cartoon stickers on the handles, but one was unmarked. Four duplicate and one unique stickers had been placed on the table in front of the child. After talking with the child about brushing his or her teeth, the experimenter began to pile all the toothbrushes in his open tote bag (to take away until the next session.) If the child did not immediately point out that he or she could not be sure of relocating the right

toothbrush, the experimenter paused and asked the child if it would be difficult to find his or her toothbrush the next time. The experimenter demonstrated the problem if necessary by having the child guess (incorrectly) which toothbrush was his or hers. Three increasingly specific prompts were then presented to encourage the child to put a sticker on his or her toothbrush. The experimenter also noted whether the child chose a sticker that no other child had selected (informative) or whether the child chose one that was already on another toothbrush (ambiguous.) If necessary, the experimenter helped the child select and place the informative sticker.

The second session was scheduled two days later, although several children were unavoidably retested after longer delays due to illnesses or family vacations. The goal of the second session was to assess whether the markers would actually help children relocate the target objects after a delay. The experimenter asked the child to find the red pen in order to make another drawing, and to find his or her toothbrush to demonstrate its use. At the end of the session children were given their toothbrushes to take home.

Results and Discussion

One goal of the study was to emphasize to the children that it would be difficult to relocate the target objects without mnemonic assistance. On the pens task, there was some evidence that the children were aware of the difficulty of unassisted retrieval. They had to open and inspect many pens in order to find the red one, and most told the experimenter that it had been hard to find the red pen. The task was also designed to encourage children to use a marker: An object that could serve as an effective marker -- a distinctively colored pen cap -- was clearly visible on the table. Despite these efforts to simplify the task, both older and younger preschoolers generally required more than two prompts to use the new pen cap as a marker. The mean number of prompts required by the 3 1/2 year olds was 2.5 (out of 3 prompts possible), while the 5 year olds required an average of 2.2 prompts. These means were not

significantly different.

On the toothbrush task, older children required an average of 1.6 prompts to use a sticker as a marker, while younger children required an average of 2.5 prompts. The toothbrush task may have been easier for the older children because they saw that the stickers had already been used as markers by other children. However, there were no order effects on the children's performance. That is, older children who first received the toothbrush task still often required several prompts on the pens task. The performance of younger children was similar on both tasks.

The toothbrush task was also designed to assess whether children would evaluate the communicative informativeness of the markers and select one that had not already been used. About half the children selected a sticker that would have misled them at the time for retrieval; 66% of the younger children and 55% of the older children chose a sticker that had already been used. Most explained their selection in terms of personal preferences or interests; for example, one child chose the birthday cake sticker and said "I like cake!" In contrast, children who selected the unique sticker explained their choices in terms of how it would help them with the relocation problem. For example, one child said "There's no cakes on these ones so I can figure out which one is mine."

Although children generally required prompting and demonstrations to prepare markers on both the pens and toothbrush task, the results from the second session showed that the children were quite able to use the markers to relocate the objects. Retrieval performance was perfect. Even children who were unavoidably tested after 2-3 week delays were immediately able to relocate the red pen and their own toothbrush.

Although the tasks were designed to encourage children to use the markers that were provided, children did at times offer alternative suggestions for finding the objects. Most of these suggestions were ineffective. For example, one five year old proposed an exhaustive search strategy, saying that he would reach into the tote bag, pull out a toothbrush, decide if it was his or not, take out another one, and so on. He completely failed to realize that he would not be able to tell which one was his! On several occasions children seemed quite convinced that they would just *know* which object was the target without assistance. The behavior of these children seems consistent with observations of children's overconfident behavior on other memory tasks (Ritter et al., l973; Ryan et al., l970). Future research should investigate the possibility that children may not utilize effective preparation strategies because they overestimate their memory prowess on prospective memory tasks (Meacham & Leiman, l982).

Summary. Children participated in two tasks where they had to relocate target objects after a delay. The results showed that even when the retrieval problem was emphasized and when markers were easily available, preschoolers required several prompts to prepare markers to help themselves solve the relocation problem. In addition, many children selected reminders that were not sufficiently specific. They failed to anticipate that they would be misled at the time for retrieval. Children's alternative strategies for relocating the objects implied that they may sometimes fail to use markers because they overestimate their memory prowess.

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